

***Myxosoma lairdi* n.sp. (Protozoa : Myxosporidia) parasitic in the gut of the estuarine fish, *Liza macrolepis* Smith**

C C NARASIMHAMURTI and C KALAVATI

Department of Zoology, Andhra University, Waltair 530 003

MS received 27 January 1979; revised 25 June 1979

**Abstract.** A new species of myxosporidian, *Myxosoma lairdi* n.sp. infecting the gut of *Liza macrolepis* Smith is described.

**Keywords.** *Myxosoma lairdi* n.sp.; *Liza macrolepis*.

### 1. Introduction

Several species of *Myxosoma* have been described in recent years and some of the descriptions include checklists (Baker 1963; Hoffman and Putz 1965; Lalita Kumari 1969; Narasimhamurti 1970; Chernova 1970; Parker *et al* 1971; Iversen *et al* 1971; Ishizaki 1973; Spall 1974). In the following account yet another species of *Myxosoma* from the gut muscles of the estuarine fish, *Liza macrolepis* Smith, is described.

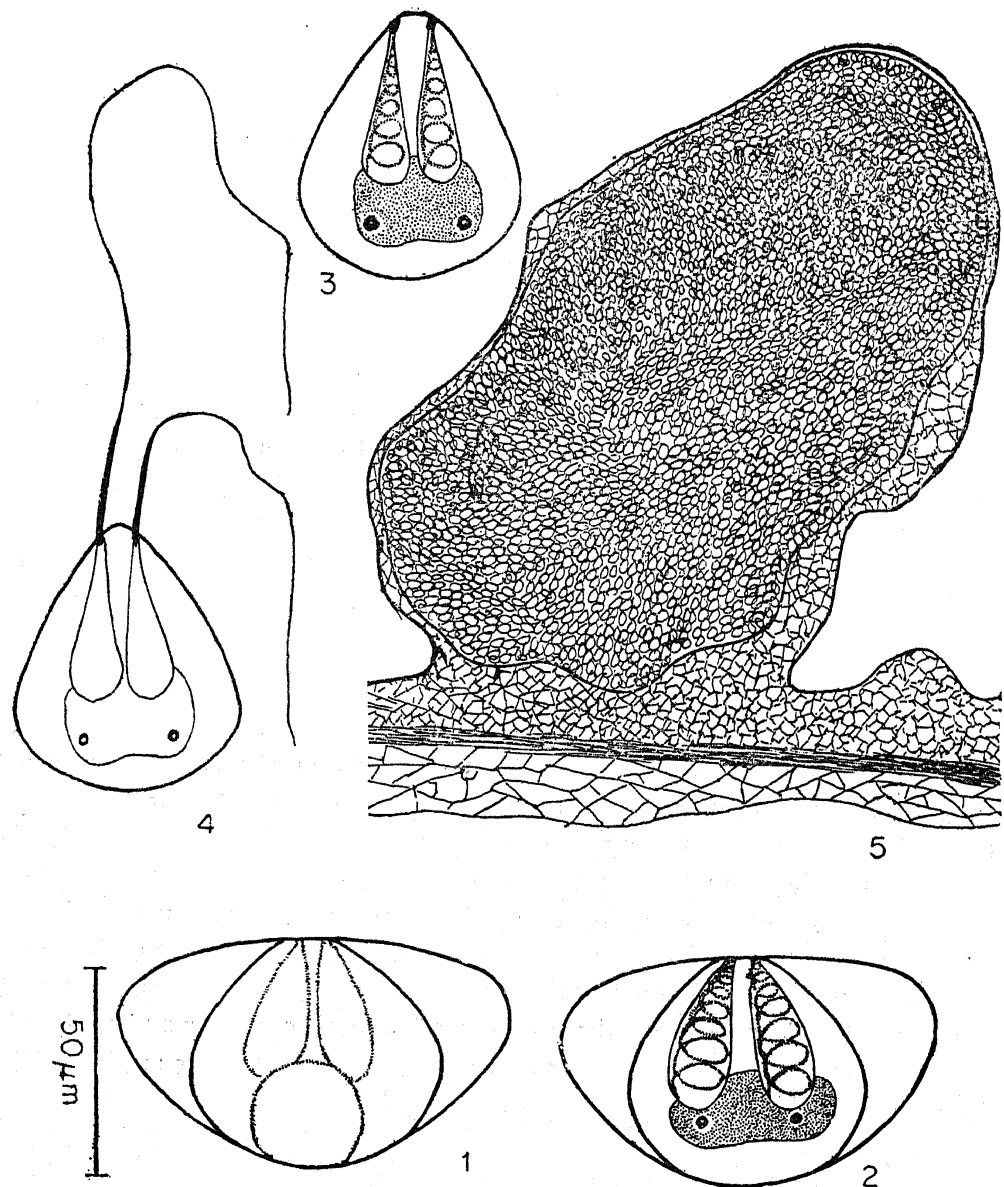
### 2. Materials and methods

*Liza macrolepis* Smith was obtained from the fish market in Bheemunipatnam (Andhra Pradesh). As no external infections were observed in the fish, they were examined for infection with myxosporidian parasites. The infected fish showed whitish cysts attached superficially to the outer wall of the gut. Smears of the cysts of different sizes are fixed in methyl alcohol and stained with Giemsa. Isolated cysts and cysts *in situ* were fixed in alcoholic Bouin's fluid, sectioned at 8  $\mu$ m thickness and stained with Heidenhain's iron Haematoxylin. Fresh spores were treated with India ink and Lugol's iodine to detect the presence of mucous envelope and iodophilous vacuole. Observations on the fresh spores and measurements were made in Ringer's solution.

### 3. Observations

70 *Liza macrolepis* ranging in size from 15-20 cm and belonging to both sexes were examined during October-November 1977 and 7 of them (10%) were found infected

with a new species of *Myxosoma*. Opaque white cysts ranging in diameter from 1.5–3.0 mm were found attached superficially to the outer wall of the gut (figure 5). The spores are pear-shaped in capsular view and measure  $4.6-5.2 \times 9.0-9.5 \mu\text{m}$  (figure 3). An outer thin mucous envelope which appears prominently in the form of two lappets on either side is seen sideways (figures 1 and 2). The polar capsules are of equal size, pear-shaped and have a long neck. They are parallel to each other and lie one on either side of the median line measuring  $3.2 \times 2.0 \mu\text{m}$ . Their openings to the outside are widely separated. A deeply stained granule is present at the point where the polar capsules open to the outside (figures 3 and 4). The polar filament when coiled inside the polar capsule had 5–7 windings (figures 2 and 3)



Figures 1-5. 1. Spore in fresh condition (side view). 2. Spore stained with Giemsa (side view). 3. Spore stained with Giemsa (capsular view)—Note the polar filaments coiled inside the capsule. 4. Spore stained with Giemsa. Note the everted polar filaments and the thickened basal part of the filament. 5. Section of a cyst attached to the gut wall.

and when fully everted measured 50–60  $\mu\text{m}$  in length. The polar filament is coarse in the basal 1/5th part while the rest of it was uniformly thin. The sporoplasm which is dumb-bell shaped contains 2 ring-shaped nuclei placed towards the sides. No iodophilous vacuole is detected when stained with Lugol's iodine or Best's Carmine.

#### 4. Discussion

Two species of *Myxosoma*, *M. intestinalis* Narasimhamurti 1970 and *M. cephalis* Iversen *et al* 1971, have been reported so far from hosts related to the present form. The former was reported from *Mugil waigensis* and the spores are much bigger (12.8–13.5  $\times$  8.6–9.5  $\mu\text{m}$ ). The latter species was reported from the brain meninges gills, jaw bone, body cavity and crop tissue of *Mugil cephalus*, and in this case also the spores are bigger (14.1  $\times$  11.0  $\times$  9.0  $\mu\text{m}$ ). The measurements of the spores of the present form conform to those of *M. cerebralis*. Kudo 1933 (8.9  $\times$  7.6  $\times$  6.7  $\mu\text{m}$ ) reported from the cartilage and connective tissue of *Salmo fontinalis*; *M. encephalinum* (Mulso 1911) Kudo 1933 (5.0–5.5  $\mu\text{m}$  in diameter) reported from the blood vessels and brain of *Cyprinus carpio* (Ishii, 1916) Kudo 1933; *M. cuneata* Bond, 1939 (9.0–10.0  $\times$  5.0–7.0  $\times$  4.0–5.0  $\mu\text{m}$ ) from the dermis of muscles and surface of gill arches of *Esox masquinongy* and *M. squamalis*, Iversen 1954 (8.6–9.9  $\times$  7.7–9.9  $\times$  5.6–7.7  $\mu\text{m}$ ) in the scales of *Salmo gairdneri*. The present form differs from the above mentioned species in that the spores have a mucous envelope which extends in the form of two prominent lappets on either side and in the presence of pear-shaped polar capsules with long necks with their openings to the outside widely separated. It is thus seen that the present form does not agree with any of the species of *Myxosoma* so far described in all its features. This is also the first report of a *Myxosoma* species from the present host, and hence it is considered new and the name *Myxosoma lairdi* n.sp. is proposed in honour of Prof. Marshall Laird, Director, Research Unit for Vector Pathology, Department of Biology, Memorial University of Newfoundland, St. John's Newfoundland, Canada.

#### Acknowledgements

Thanks are due to Prof. K Hanumantha Rao, for the facilities provided. Thanks are also due to the UGC, New Delhi, for the sanction of a scheme to study the fish parasites.

#### References

- Baker J R 1963 Three new species of *Myxosoma* (Protozoa: Myxosporidia) from the east African fresh water fish; *Parasitology* 53 285–293
- Bond J F 1939 Myxosporidia from fishes of the genus *Esox*; *J. Parasitol.* 25 377–381
- Chernova T N 1970 New species of mucous sporovies (Myxosporidia) of fish in some reservoirs of western Georgia; *Vest. Zool.* 2 60–64
- Hoffman G L and Putz R E 1965 Development of *Myxosoma* sp. in the cartilage of fishes; *J. Parasitol.* 49 30

- \*Ishizaki H 1957 Notes on myxosporidian parasites of fishes; *Bull. Fukoka Gakugei Univ. (Nat. Sci.)*. 7 107-112
- Iversen E S 1954 A new myxosporidian, *Myxosoma squammalis* parasite of some salmonoid fish; *J. Parasitol.* 40 397-404
- Iversen E S, Chitty N and Van Meter N 1971 Some myxosporidia from marine fishes of South Florida; *J. Protozool.* 18 82-86
- Kudo R R 1933 A taxonomic consideration of myxosporidia; *Trans. Am. Microsc. Soc.* 52 192-216
- Lalita Kumari P S 1969 Studies on parasitic protozoa (Myxosporidia) of fresh water fishes of Andhra Pradesh, India; *Riv. Parasitol.* 30 153-226
- Narasimhamurti C C 1970 *Myxosoma intestinalis* n.sp. (Protozoa: Myxosporidia) from the gut epithelium of the estuarine fish, *Mugil waigensis* Q and G; *Proc. Indian Acad. Sci.* B81 19-27
- Parker J D, Spall R D and Warner M C 1971 Two new myxosporidia, *Henneguya gambusi* sp.n. and *Myxosoma pharyngeus* sp.n. in the mosquito fish *Gambusia affinis* (Baird and Girard); *J. Parasitol.* 57 1297-1301
- Spall R D 1974 A new myxosporidian in red and golden shiners; *J. Parasitol.* 60 169-171

---

\* Not referred to in original.